



Serial No. 10/645, 086  
Art Unit 3673  
John E. Irvine  
TKHR 11314-1110

**AMENDMENT TO CLAIMS**

Please amend the claims of the application as indicated by inserting the underlined matter and deleting the matter lined through:

1           1.       (Currently amended) A structural panel fabricated of synthetic resin material for  
2 driving into soils and forming walls, piers, and dikes, comprising:

3               said structural panel being elongated and of constant size and shape along its length and  
4 shaped for being continuously manufactured in one piece ~~characterized by having been extruded~~  
5 ~~lengthwise~~;

6               said structural panel including in cross section:

7                   a central wall section including an inner surface, an outer surface, and opposed  
8 side wall sections co-planar with said central wall section and forming with said central  
9 ~~inner~~ wall section a substantially flat outer surface of the structural panel;

10               a male locking element disposed on and extending laterally from one of said side  
11 wall sections, a female locking element disposed on and extending laterally from the  
12 other of said side wall sections, said female locking element being configured to slidably  
13 receive and retain said male locking element of a duplicate structural panel, said male and  
14 female locking elements configured not to ~~not~~ protrude beyond the substantially flat outer  
15 surface of the structural panel; and

16               first and second strengthening flanges integrally formed on said inner surface, said  
17 first and second strengthening flanges being both substantially perpendicular to said

18 central wall section and to said side sections and substantially parallel to each other, said  
19 first and second strengthening flanges extending along said length of said structural panel  
20 and with said central wall section forming a U-shape with the opening of the U-shape  
21 facing away from said central wall section such that access is available between the  
22 strengthening flanges along the length of the structural panel.

1 2. (Previously presented) The structural panel of claim 1, further including a  
2 strengthening sheet having been encased in said material by extrusion of said structural panel and  
3 shielded by said material from contact with the outside environment.

1 3. (Previously presented) The structural panel of claim 2, wherein said strengthening  
2 sheet comprises metal sheet material, said strengthening sheet being U-shaped in cross section,  
3 and wherein said strengthening member is disposed in said U-shape of said structural panel  
4 formed by said first and second strengthening flanges and said central wall section.

1 4. (Cancelled)

1 5. (Previously presented) The structural panel of claim 2, wherein said strengthening  
2 sheet is comprised of material selected from the group consisting essentially of: steel, galvanized  
3 steel, expanded metal, fiberglass and aluminum.

1           6.       (Currently amended) A structural panel fabricated of synthetic resin material for  
2 driving into soils and forming walls, piers, and dikes, comprising:

3           said structural panel being elongated and of constant size and shape along its length and  
4 shaped for being continuously manufactured ~~characterized by having been extruded lengthwise;~~

5           said structural panel including in cross section:

6                   a central wall section including an inner surface, an outer surface, and opposed  
7 side wall sections co-planar with said central wall section;

8                   a locking elements disposed on and extending laterally from the side wall sections  
9 for connecting duplicate structural panels together in side-edge to side-edge relationship,

10                   first and second strengthening flanges integrally formed on said inner surface, said  
11 first and second strengthening flanges being both substantially perpendicular to said  
12 central wall section and substantially parallel to each other, said first and second  
13 strengthening flanges extending along said length of said structural panel and with said  
14 central wall section forming a U-shape with the opening of the U-shape facing away from  
15 said central wall section such that access is available between the strengthening flanges  
16 along the length of the structural panel,

17                   said strengthening flanges each including ~~include~~ a distal edge and a secondary  
18 flange extending from said distal edge of each of said strengthening flanges and  
19 extending away from the other strengthening flange such that said secondary flanges are  
20 substantially perpendicular to said strengthening flanges.

1           7.     (Currently amended) A structural panel fabricated of synthetic resin material for  
2 driving into soils and forming walls, piers, and dikes, comprising:

3           said structural panel being elongated and of constant size and shape along its length and  
4 shaped for being continuously manufactured in one piece ~~characterized by having been extruded~~  
5 ~~lengthwise;~~

6           said structural panel including in cross section:

7                 a central wall section including an inner surface, an outer surface, and opposed  
8 side wall sections co-planar with said central wall section;

9                 locking elements disposed on and extending laterally from said side wall sections  
10 for connecting duplicate ones of the structural panels together, said locking elements  
11 configured such that the locking elements do not extend beyond the plane of the central  
12 wall section and the opposed side wall sections of the connected structural panels,

13                 first and second strengthening flanges integrally formed on said inner surface, said  
14 first and second strengthening flanges being both substantially perpendicular to said  
15 central wall section and substantially parallel to each other, said first and second  
16 strengthening flanges extending along said length of said structural panel and with said  
17 central wall section forming a U-shape with the opening of the U-shape facing away from  
18 said central wall section such that access is available between the strengthening flanges  
19 along the length of the structural panel,

20                 a first plurality of retention apertures disposed along the length of said first  
21 strengthening flange;

22 a second plurality of retention apertures disposed along the length of said second  
23 strengthening flange; and

24 wherein said retention apertures are configured to receive retention means  
25 between said first and second strengthening flanges, said retention means being  
26 configured to retain said structural panel in a fixed position in relation to the soils into  
27 which said structural panel is driven.

1 8. (Previously presented) A barrier wall comprising a series of structural panels of  
2 the type described in claim 7, wherein said retention means further comprise:

3 an anchor bar configured to pass through one of said retention apertures of each said first  
4 and second pluralities of retention apertures such that said anchor bar is disposed substantially  
5 parallel to said central wall section and substantially perpendicular to said first and second  
6 strengthening flanges;

7 an anchor sheet configured to extend between said first and second strengthening flanges  
8 and be securely attached to said anchor bar; and

9 wherein said anchor sheet is connected to said structural panel by said anchor bar such  
10 that said anchor sheet extends outwardly into the soils disposed behind said structural panel,  
11 thereby securing said structural panel adjacent the soils.

1 9. (Previously presented) The structural panel of claim 2, wherein said strengthening  
2 sheet is comprised of expanded metal, said expanded metal defining a plurality of perforations.

1           10.   (Currently amended) A structural panel for driving into soils and forming walls,  
2   piers, and dikes, comprising:

3           said structural panel being elongated and of constant size and shape along its length and  
4   fabricated of synthetic resin material and shaped for being continuously manufactured  
5   ~~characterized by having been extruded lengthwise;~~

6           said structural panel including in cross section:

7           a central wall section including an inner surface, an outer surface, and opposed  
8   side wall sections co-planar with said central wall section and forming with said inner  
9   wall a substantially flat outer surface of the structural panel;

10          locking elements disposed on and extending laterally from said side wall sections  
11   configured for locking duplicate ones of the structural panels together,

12          first and second strengthening flanges integrally formed on said inner surface, said  
13   first and second strengthening flanges being both substantially perpendicular to said  
14   central wall section and to said side sections and substantially parallel to each other, said  
15   first and second strengthening flanges extending along said length of said structural panel  
16   and with said central wall section forming a U-shape with the opening of the U-shape  
17   facing away from said central wall section such that access is available between the  
18   strengthening flanges along the length of the structural panel,

19          a first plurality of retention apertures disposed along the length of said first  
20   strengthening flange;

21          a second plurality of retention apertures disposed along the length of said second  
22   strengthening flange; and

23                   retention means received in said retention apertures configured to extend from  
24                   between said first and second strengthening flanges and retain said structural panel in a  
25                   fixed position in relation to the soils into which the structural panel is driven.

1           11.    (Original) The structural panel of claim 10, wherein said retention means further  
2   comprise:  
3           an anchor bar configured to pass through one of said retention apertures of each said first  
4   and second pluralities of apertures such that said anchor bar is disposed substantially parallel to  
5   said central wall section and substantially perpendicular to said first and second strengthening  
6   flanges;  
7           an anchor sheet configured to be securely attached to said anchor bar; and  
8   wherein said anchor sheet is connected to said structural panel by said anchor bar such that said  
9   anchor sheet extends outwardly into the soils disposed behind said structural panel, thereby  
10   securing said structural panel adjacent the soils.

1           12.   (Previously presented) The structural panel of claim 10, wherein each of said  
2   retention apertures of said first and second pluralities of retention apertures extends through one  
3   of said perforations of said expanded metal such that said strengthening member is encapsulated  
4   within said structural panel.

1           13.   (Original) The structural panel of claim 9, wherein said expanded metal is  
2   comprised of material selected from the group consisting of: steel and galvanized steel.

1           14.   (Previously presented) The structural panel of claim 2, wherein said strengthening  
2   member comprises fiberglass, said strengthening member being U-shaped in cross section, and  
3   wherein said strengthening member is disposed in a similarly U-shaped portion of said structural  
4   panel formed by said first and second strengthening flanges and said central wall section.

1           15.   (Original) The structural panel of claim 14, wherein said strengthening member is  
2   perforated.

1           16.   (Currently amended) A method of installing a driven wall structure for retaining  
2   soils, the wall including a means for retaining the wall in a fixed position relative to the soils, a  
3   series of elongated structural panels, each said structural panel being elongated and of constant  
4   size and shape along its length, and shaped for being manufactured in one piece ~~by extrusion~~,  
5   each having an upper end portion and a lower end portion, opposed inner and outer surfaces, said  
6   outer surface being substantially flat, elongated opposed side edges having locking elements  
7   shaped for slidably connecting to the side edges of an adjacent structural panels with the outer  
8   surfaces of the adjacent panels arranged in the same plane and the locking elements not  
9   extending beyond the plane of the outer surfaces, and a pair of spaced, parallel strengthening  
10  flanges extending from the inner surface, comprising the steps of:

11           joining the locking element of the opposed side edges with the locking element of each  
12  structural panel to one of the opposed side edges of a previously driven structural panel and  
13  driving the lower end portion of each structural panel into the soil, thereby forming the wall  
14  structure with a flat an outside surface;



15           attaching the means for retaining to the strengthening flanges of the structural panels; and  
16           disposing soil about the means for retaining and between the strengthening flanges and  
17           adjacent the inner surfaces of the structural panels.

1           17.   (Previously presented) The method of claim 16, wherein the step of attaching the  
2           means for retaining to the strengthening flanges further comprises:  
3           passing an anchor bar through the strengthening flanges such that the anchor bar is  
4           substantially parallel to the wall structure;  
5           securing an anchor sheet to the anchor bar, thereby securing the anchor sheet to the wall  
6           structure; and  
7           extending the anchor sheet outwardly from the inner surface of the wall structure such  
8           that the anchor sheet is substantially perpendicular to the wall structure and rests on the existing  
9           soil.

1           18.   (Previously presented) The method of claim 16, wherein the step of attaching the  
2           means for retaining to the strengthening flanges further comprises:  
3           securing a plurality of anchor members to the strengthening flanges, each anchor member  
4           having a proximal end secured to one of the strengthening flanges and a distal end extending  
5           outwardly from the wall structure;  
6           securing the distal end of each anchor member to an anchor wall, the anchor wall being  
7           substantially parallel to the wall structure.

1           19.   (Previously presented) A driven wall structure for retaining soil, comprising:  
2           a plurality of structural panels, each said panel being elongated and of constant size and  
3           shape along its length and shaped for being continuously manufactured, including in cross  
4           section:  
5           a central wall section including an inner surface and an outer surface, opposed first and  
6           second side wall sections on opposite sides of said central wall section co-extensive with said  
7           central wall section and forming the structural panel with a planar outer surface;  
8           a first locking element disposed on and extending laterally from said first side wall  
9           section, a second locking element disposed on and extending laterally from said second side wall  
10          section, said first and second locking elements being configured to slidably receive and retain  
11          locking elements of similar structural panels and lock the structural panels together in edge-to-  
12          edge relationship; and  
13          said first and second locking elements being formed such that the locking elements do not  
14          protrude beyond the plane of the outer surface of said structural panel, such that when a plurality  
15          of the structural panels are assembled in parallel inner locking side-edge to side-edge relationship  
16          to form the driven wall structure, the driven wall structure has a substantially planar outer surface  
17          without the locking elements protruding beyond the planar outer surface;  
18          at least one strengthening flange integrally formed on said inner surface of said central  
19          wall section, said strengthening flange being substantially perpendicular to said central wall  
20          section and extending along said length of said structural panel;

21 a plurality of anchor sheets, each said anchor sheet being securely attached to said  
22 strengthening flange of a panel one of said anchor bars and extending outwardly from said wall  
23 structure; and  
24 wherein the soil is disposed about said strengthening flange and about said anchor sheets  
25 such that the weight of the soil retains the wall structure in a desired position.

1 20. (Original) The wall structure of claim 19, wherein said structural panel further  
2 comprises a strengthening member comprised of expanded steel, said strengthening member  
3 being substantially L-shaped in cross-section, and wherein said strengthening member is  
4 disposed in a similarly L-shaped portion of said structural panel formed by said strengthening  
5 flange and a portion of said central wall section.

1 21. (Original) The wall structure of claim 20, wherein said structural panel is  
2 comprised of a material selected from the group consisting of: polyvinyl chloride, polypropylene  
3 and polyethylene.

1 22. (Previously presented) The wall structure of claim 20, wherein said strengthening  
2 member has a thickness of approximately .010 inches to .750 inches.

1           23.   (Previously presented) The wall structure of claim 19, wherein said structural  
2 panel further comprises:

3           said strengthening flange includes a first strengthening flange and a second strengthening  
4 flange forming a U-shape with said panel; and

5           a strengthening member comprised of metal, said strengthening member being U-shaped  
6 in cross section, and wherein said strengthening member is disposed in a similarly U-shaped  
7 portion of said structural panel formed by said first and second strengthening flanges and a  
8 portion of said central wall disposed therebetween.

1           24.   (Original) The wall structure of claim 23, wherein said strengthening member is  
2 further comprised of expanded metal, said expanded metal defining a plurality of perforations,  
3 and wherein each of said anchor bars extends through said perforations such that said  
4 strengthening member is encapsulated within said structural panel.

1           25.   (Original) The wall structure of claim 23, wherein said strengthening member is  
2 comprised of a material selected from the group consisting of: steel and galvanized steel.

1           26.   (Original) The wall structure of claim 19, wherein said structural panel further  
2 comprises:

3           a first and a second strengthening flange; and

4           a strengthening member comprised of fiberglass, said strengthening member being U-  
5 shaped in cross section, and wherein said strengthening member is disposed in a similarly U-

shaped portion of said structural panel formed by said first and second strengthening flanges and  
a portion of said central wall disposed therebetween.

27-32 (Cancelled)

33. (Currently amended) A structural panel for driving into soils and forming with  
duplicate structural panels a driven wall, said structural panel comprising:

a panel that is elongated and of constant size and shape along its length and shaped for  
being continuously manufactured in one piece,

said panel including in cross section:

an inner surface and a flat outer surface opposed to said inner surface, and  
opposed side edges;

elongated locking elements formed on said opposed side edges configured to  
slidably receive and retain a locking element of a duplicate structural panel and join the  
duplicate structural panels in side-by-side relationship with the outer surfaces of the  
joined panels aligned and forming a flat wall surface;

said locking elements being formed such that the locking elements do not protrude  
beyond the flat outer surface of the panel, such that when a plurality of the structural panels are  
assembled in inner-locking side-edge to side-edge relationship with their outer surfaces aligned  
to form a straight wall with an outer surface, the locking elements do not protrude beyond the  
outer surface of the straight wall, and

17        said structural panel ~~material~~ having been formed ~~extruded~~ about a strengthening member  
18        that is positioned in said structural panel and said strengthening member is protected by said  
19        structural panel from contact with other objects.

1        34.        (Previously presented) The structural panel of claim 33, and further including:  
2                strengthening flanges integrally formed on said inner surface of said panel  
3        extending along the length of said panel at intervals spaced from each other and spaced from said  
4        elongated locking elements and extending away from said inner surface,  
5                said strengthening flanges together with a portion of said panel forming a U-shape  
6        with the opening of the U-shape facing away from said inner surface such that access is available  
7        between the strengthening flanges along the length of the structural panel, and  
8                said strengthening panels defining retention apertures for connecting said  
9        strengthening panels to an anchor wall.

1        35.        (Previously presented) The structural panel of claim 34 and further including:  
2        secondary strengthening flanges formed on said strengthening flanges, said secondary  
3        strengthening flanges extending away from each other.

1        36.        (Previously presented) The structural panel of claim 33, wherein said  
2        strengthening member is formed of sheet material and is positioned in said U-shape.